



## METHOD USING SECONDARY ORIENTATION TO TUNE BUCKET NATURAL FREQUENCY

### ABSTRACT OF THE DISCLOSURE

5        Tuning of turbine bucket torsional and stripe mode natural frequencies  
can be effected without altering any turbine bucket physical features, such as  
weight and/or shape, and without affecting flexure frequencies. The tuning of  
certain turbine bucket natural frequencies serves to avoid detrimental blade  
resonance, thus improving the reliability of a gas turbine. The method  
includes investment casting the turbine bucket with a single crystal alloy, and  
10    tuning the natural frequency of the turbine bucket without modifying physical  
features of the turbine bucket by placing a crystal seed along a desired  
direction according to a relative orientation of an engine axial direction.

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